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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/760,597	01/20/2004	Stephen Memory	00655P1239US	1102

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WOOD, PHILLIPS, KATZ, CLARK & MORTIMER
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EXAMINER

COMPTON, ERIC B

ART UNIT PAPER NUMBER

3726

DATE MAILED: 12/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/760,597

Applicant(s)

MEMORY ET AL.

Examiner

Eric B. Compton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12

is/are pending in the application.

4a) Of the above claim(s) ____ is/are withdrawn from consideration.

- 5) ☐ Claim(s) ____ is/are allowed.

- 6) ☒ Claim(s) 1-12 is/are rejected.

- 7) ☐ Claim(s) ____ is/are objected to.

- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 1, 3-5, 7-10, and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 10-089870 to NIPPON LIGHT METAL ("NIPPON").

Regarding claims 1, 8, 10, and 12, NIPPON discloses a method of fabricating a heat exchanger comprising:

a) providing a plurality of generally parallel tube runs (3) of a flattened heat exchange tube having a major dimension and a minor dimension;

b) providing a plurality of plate fins (1), each having a plurality of tube slots (2) approximately equal to the number of tube runs, each slot opening to an edge of the associated fin and having

i) a shape corresponding to the cross-sectioned shape a tube run to be received in the slot,

ii) a depth less than the major dimension of the tube run to be received in the slot, and

iii) a width approximately equal to or slightly less than the minor dimension of the tube run to be received in the slot;

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- c) fitting the tube runs snugly into corresponding slots in each of the fins such that an edge of each tube run extends a distance out of the slots in which it is received;
- d) locating the assembly resulting from step c) on a supporting surface with said tube run edges in contact with said supporting surface and with said plate fins extending above said tube runs; and
- e) subjecting said assembly to an elevated temperature sufficient to braze said fin to said tube runs while said assembly is on said supporting surface and in the absence of brazing fixtures holding said fins and said tube runs in assembled relation. See JPO Machine Translation [0011 & 0016] (disclosing brazing).

Regarding claim 3, as shown in the figures the tube runs are each defined by a straight piece of tubing.

Regarding claim 4, the shape of the tubing may be teardrop shaped. See Fig. 3.

Regarding claim 5, the shape of the tubing may be oval shaped. See Fig. 8.

Regarding claims 7-8, the tubing and fins are made of an aluminum braze alloy. See JPO Machine Translation [0009].

Regarding claim 9, the tube runs may be clad with an aluminum braze alloy prior to step a. See JPO Machine Translation [0028].

Regarding claim 10, as shown in Fig. 3, the flattened tubing has a major and minor dimension corresponding to the depth of the slot. In Fig. 8b, the depth of the slot is less than the major dimension of the tubing, such that the extension section (3a) of the tubing slightly extends a short distance out of the slot. See *a/so* JPO Machine Translation (referring to element 3a as extension section).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over NIPPON in view of JP 05-099581 to Tanaka et al ("Tanaka").

NIPPON discloses the invention cited above. However, the reference does not disclose the tube runs are defined by straight sections of a serpentine tube.

Tanaka discloses a method for forming a heat exchanger similar in construction to NIPPON. As shown in Fig. 8, the tube runs may be defined by straight sections of a serpentine tube. Similarly, as shown in Fig. 1, the tube runs may alternatively be each defined by a straight piece of tubing. The design of the heat exchanger of Fig. 8, allows for greater surface area for a tube for heat dissipation.

Regarding claim 2, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have constructed the heat exchanger of NIPPON wherein the tube runs are defined by straight sections of a serpentine tube, in light of the teachings of Tanaka, in order to increase the effective heat dissipation area of the tube.

5. Claims 6 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over NIPPON in view of U.S. Pat. 4,860,822 to Sacks.

NIPPON discloses the invention cited above. However, the reference does not disclose that the fins are provided with curved sections between the slots.

Sacks discloses a method of forming a heat exchanger having a number of tube runs inserted within slots (16) in plate fin members (12). The plate fin members (12) have a sine-like wave pattern alternative in convex and concave portions between the slots (16). This configuration helps "increase the ability of late fin 12 to absorb or dissipate heat as required." Col. 3, lines 66-68.

Regarding claims 6 and 11, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided the fins of NIPPON with curved sections between the slots, in light of the teachings of Sacks, in order to increase the heat transfer efficiency of the heat exchanger.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric B. Compton whose telephone number is (571) 272-4527. The examiner can normally be reached on M-F, 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter B. Vo can be reached on (571) 272-4690. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Eric Compton", with a stylized flourish at the end.

Eric Compton
Patent Examiner